

# A Cluster-Analytic Investigation of MMPI Profiles of Serious Male and Female Juvenile Offenders

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## ABSTRACT

**Objective:** To use cluster analysis to identify psychological profiles and related mental health symptoms among male and female juvenile offenders. **Method:** Juvenile offenders ( $N = 141$ ) incarcerated in the California Youth Authority completed the Minnesota Multiphasic Personality Inventory (MMPI) and the Massachusetts Youth Screening Instrument-Version 2 (MAYSI-2). **Results:** MMPI cluster analysis revealed four distinct profiles: two for male and two for female juvenile offenders. Among males, we identified one *Normative* cluster with no clinically elevated scores. A second male cluster, labeled *Disorganized*, exhibited clinical elevations on scales 8 (Schizophrenia), 6 (Paranoia), 4 (Psychopathic Deviate), and 7 (Psychasthenia). Among females, two clinically elevated profiles emerged. One *Impulsive-Antisocial* cluster consisted of clinical elevations on scale 4 (Psychopathic Deviate), which has been consistently associated with delinquent and antisocial behavior. The second cluster, labeled *Irritable-Isolated*, produced elevations on MMPI scales 4 (Psychopathic Deviate), 8 (Schizophrenia), 6 (Paranoia), and 7 (Psychasthenia). There were no significant sex, ethnicity, or offense differences across clusters, but the clusters exhibit distinct psychiatric profiles (MMPI) and mental health symptoms (MAYSI-2). **Conclusions:** The findings indicate that not only do female offenders have more acute mental health symptoms and psychological disturbances than male offenders, they exhibit qualitatively distinct psychiatric profiles. Results reinforce the need for assessment of mental health symptoms for male and female juvenile offenders as well as sex-appropriate treatments. *J. Am. Acad. Child Adolesc. Psychiatry*, 2003, 42(7):770–777. **Key Words:** juvenile offenders, mental health, Minnesota Multiphasic Personality Inventory.

Studies have estimated the rates of psychological disturbance among youths in the juvenile justice system to be exceptionally high (Cauffman, 2000; Cauffman et al., 1998; Kazdin, 2000; Teplin et al., 2002; Wasserman et al., 2002). These studies have found significant levels of con-

duct disorder, substance abuse, depression, posttraumatic stress disorder, and other mental health problems among juvenile offenders. However, relatively little is known about the specific psychological symptoms of incarcerated youths, and it is likely that a substantial number of these youths have serious psychological symptoms that have not been identified. In this study, we use a cluster analysis of the Minnesota Multiphasic Personality Inventory (MMPI) to provide psychological profiles of male and female juvenile offenders (Hathaway and McKinley, 1967). We then compare the mental health symptoms of male and female offenders with varying MMPI profiles using the Massachusetts Youth Screening Instrument-Version 2 (MAYSI-2) (Grisso et al., 2001), a mental health screen developed for incarcerated youths.

Our main objective is to identify psychological profiles of juvenile offenders by using the MMPI, one of the most extensively used psychological tests (Friedman et al., 1989; Graham, 1987). Within the judicial system, the MMPI has been used for identifying psychological char-

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Accepted February 11, 2003.

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Preparation of this manuscript was supported by funding to Dr. Cauffman from the Stanford Center on Adolescence and the John D. and Catherine T. MacArthur Foundation Network on Adolescent Development and Juvenile Justice. Dr. Cauffman thanks the California Youth Authority, in particular Saeed Behshid and Rudy Haapanen, for their assistance with this study.

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0890-8567/03/4207-0770©2003 by the American Academy of Child and Adolescent Psychiatry.

DOI: 10.1097/01.CHL.0000046877.27264.F6

acteristics associated with juvenile delinquency and other adolescent problem behaviors. One scale in particular (scale 4, Psychopathic Deviate) was developed in part to differentiate persons who might become involved in the judicial system from the general population (McKinley and Hathaway, 1944).

Therefore, it is not surprising that the first investigation of the MMPI with adolescents (Capwell, 1945) found that delinquent and nondelinquent adolescent girls were differentiated by scale 4, which covers a wide range of problem areas, including family conflict, problems with authority figures, delinquency, poor school achievement, risk-taking, and impulsivity. Since Capwell's research, other MMPI profiles have been associated with delinquent behavior. These profiles have consistently included significant clinical elevations on scales 4 (Psychopathic Deviate), 8 (Schizophrenia), and 9 (Hypomania). For example, in a prospective study of more than 15,000 adolescents, Hathaway and Monachesi (1963) found that these three scales, labeled "excitatory" scales, successfully predicted delinquent behaviors prior to the onset of antisocial behavior.

While many researchers and clinicians consider the 4-9 and the 4-9-8 MMPI code types to be characteristic of individuals who are likely to become juvenile offenders, recent studies have found mixed support for Hathaway and Monachesi's (1963) excitatory dimension. Williams and Butcher (1989), in a study of 844 adolescents that included substance abuse and psychiatric inpatients, found elevations on the excitatory scales (4, 8, 9) to be related to antisocial behaviors in both males and females; however, these authors also found scale 6 (Paranoia) to be an excitatory scale for males, but not for females. To our knowledge, only one previous study has examined MMPI profiles in male and female juvenile offenders (Boone and Green, 1991). While the 4-9 code type emerged among the highest elevations for all participants, other scales were clinically elevated. These findings provided partial support for the relevance of these "excitatory" scales; however, the magnitude of each scale elevation differed by sex of the respondent. Taken together, these studies suggest that although the 4-9 code type is a common psychological profile for incarcerated youths, it is likely that this profile is not descriptive of many juvenile offenders, especially female offenders.

Therefore, a second aim of this study is to examine variation in the psychological profiles of male and female offenders. While male arrest rates exceed female rates for virtually all offense categories, female arrests have risen

dramatically since 1981 and the growth in female juvenile arrest rates has been outpacing male growth for both violent and nonviolent offenses (Snyder and Sickmund, 1999). Arrests of adolescent females rose 23% between 1989 and 1993, and arrests for violent crimes such as murder, rape, robbery, and aggravated assault rose 55% among female adolescents (Poe-Yamagata and Butts, 1996). These statistics and recent theoretical and empirical work highlighting notable differences in the causes and form of male and female crime and delinquency suggest that female offending requires additional study (Steffensmeier and Broidy, 1999).

Most research on the mental health symptoms of juvenile offenders has been conducted with male samples; results of this research may not be generalizable to female offenders. While male and female juvenile offenders share some similar background characteristics, such as poverty and familial discord, in comparison with male offenders, female offenders are more likely to report having been physically or sexually abused (Chesney-Lind and Sheldon, 1992; Widom, 1989). Furthermore, a review of 20 studies on the adult outcomes of antisocial adolescent girls found that these girls tended to have higher mortality rates, a wider variety of psychiatric problems, more dysfunctional and violent relationships, poorer educational achievement, and less stable work histories compared with non-antisocial females (Pajer, 1998). The current study represents an opportunity to improve our understanding of the psychological correlates of serious female delinquency and to facilitate the development of directed treatment strategies for this growing population.

Our final purpose in conducting this study is to learn about the varying mental health symptoms of subgroups of juvenile offenders with disparate psychological profiles. Because we hypothesize that there will be different MMPI profiles within our offending population, we also anticipate that individuals with these profiles will differ in their mental health symptoms. To examine this hypothesis, we compare MMPI cluster groups with mental health symptoms (e.g., depressed/anxious, suicidal ideation) obtained using the MAYSI-2 (Grisso et al., 2001). The MAYSI-2 does not provide psychiatric diagnoses, and its content was not selected to correspond to specific *DSM-IV* diagnostic criteria. Rather, the MAYSI-2 is intended to serve primarily as an "alerting function" to assess mental health symptoms among juvenile offenders.

In summary, we address the following three research questions: (1) What types of psychological profiles are

commonly found among male and female juvenile offenders? (2) How do these psychological profiles within sex differ with respect to age, ethnicity, offending status, educational level, and parents' education? (3) How do groups of offenders with distinct psychological profiles differ from one another in their reports of mental health symptoms?

## METHOD

### Participants

Data for this study come from 141 assessments of male ( $n = 97$ ) and female ( $n = 44$ ) juvenile offenders incarcerated in the California Youth Authority (CYA). Participants ranged from 14 to 22 years of age (mean = 17.43, SD = 1.60). With respect to ethnicity among the male sample, 24% were African American, 45% were Hispanic, 24% were white, and 7% described themselves as other. For the female sample, 27% were African American, 23% were Hispanic, 34% were white, and 16% described themselves as other. Differences in ethnic distribution across sex were not statistically significant ( $\chi^2 = 6.99, p > .05$ ). Across both samples, approximately 30.5% were from lower-income families. The juveniles were sentenced for a range of committing offenses: 48% of the males and 77% of the females for violent crimes against persons (e.g., murder, rape, robbery, assault), 29% of the males and 14% of the females for property crimes (e.g., burglary, auto theft, receiving stolen property), 5% of both males and females for drug-related crimes, and 18% of the males and 4% of females for other crimes (e.g., violation of probation, evading an officer). Sex differences were significant for committing offenses ( $\chi^2 = 11.56, p < .01$ ). However, we did not collect information on prior offending histories. Therefore, these differences should be interpreted with caution. The average length of incarceration at the CYA was 23 months (SD = 16.17), with a minimum of 1 month and a maximum of 84 months. The juveniles who participated in this study are representative of the general CYA population, which includes violent offenders as well as chronic repeat offenders (Steiner et al., 1997).

### Measures

*Individual Characteristics.* Participants reported their age, sex, committing offense, ethnicity, educational level, and parents' education. Parents' education was used as a proxy for socioeconomic status because parental education may be the most stable component of a family's social class (Steinberg et al., 1991). Although many participants had committed multiple offenses, only information on the offense that precipitated their most recent incarceration was collected. Offenses were aggregated into 21 categories, ranging from property crimes to murder, and were further collapsed into violent and nonviolent offenses.

*Minnesota Multiphasic Personality Inventory.* This measure is a 566-item true/false inventory (Hathaway and McKinley, 1967) that includes 3 validity scales and 10 clinical scales as well as other "specialty scales." For this study, only the validity and clinical scales were obtained. The validity scales assess an individual's test response pattern or test-taking attitude and include the L (Lie), F (Infrequency), and K (Defensiveness) scales. The clinical scales assess a variety of clinical conditions (e.g., Depression, Psychopathic Deviate, Paranoia) and are used to identify individuals with psychiatric symptoms. In this study, raw scores on each scale were converted to standardized  $T$  scores using the MMPI-83 K-corrected norms for age and sex (Colligan et al., 1983).  $T$  scores greater than 70 were considered clinically significant. Reliability and validity of the clinical scales have been well-established (Graham, 1987).

*Massachusetts Youth Screening Instrument-Version 2.* The MAYSI-2, a 52-item inventory written at a fifth-grade reading level, is designed to assess mental health symptoms among juvenile offenders that may require further clinical intervention (Grisso et al., 2001). Respondents circle "yes" or "no" for each symptom experienced within the past few months. The MAYSI-2 identifies problems in seven domains: Alcohol/Drug Use ( $\alpha = .87$ ), Angry-Irritable ( $\alpha = .84$ ), Depressed-Anxious ( $\alpha = .72$ ), Somatic Complaints ( $\alpha = .79$ ), Suicide Ideation ( $\alpha = .85$ ), Thought Disturbance ( $\alpha = .53$  males only), and Traumatic Experiences (male  $\alpha = .40$ , female  $\alpha = .79$ ). It is important to note that the Thought Disturbance scale is valid only for males and that the Traumatic Experiences scale is composed of some distinct sex-specific items for males and females. Scoring is based on the total number of positive responses, and clinically significant scores have been developed in previous studies. Preliminary results suggest that the MAYSI-2 has good psychometric properties and that the scores correlate well with other types of screening instruments such as the Millon Adolescent Clinical Interview and the Child Behavior Checklist-Youth Self-Report (Grisso et al., 2001).

### Procedure

Self-report questionnaires were administered by an on-site psychologist as part of a broader study involving the development of a mental health screen for incarcerated youths. All items were read aloud and participants recorded their answers confidentially without the psychologist viewing their responses. Both the CYA and the Institutional Review Board at Stanford University approved this study. Verbal and written explanations were provided, confidentiality was assured, and written consent was obtained. Prospective participants were told that individual information provided would not be shared with the CYA staff and their decision to participate or decline would not affect their treatment at the CYA or their likelihood of eventual parole. No one declined to participate.

### Data Analysis

Data analyses were organized around our three research questions. First, cluster analysis was performed on MMPI clinical scale scores to provide a detailed assessment of the types of psychological profiles found among our sample of serious juvenile offenders. Second, analyses were conducted within each sex, including  $\chi^2$  analyses and  $t$  tests, to determine whether these clusters differed as a function of individual characteristics. Finally, we evaluated differences between MMPI cluster groups on the MAYSI-2 scale scores for each sex, to both validate and further articulate the different mental health symptoms exhibited by each cluster.

### Statistical Procedure

Cluster analysis was used to identify the psychological profiles in the sample.  $T$  scores on the MMPI clinical scales were analyzed separately for males and females. MMPI validity scales were evaluated to determine whether any participants needed to be excluded from these analyses. Thirty of the 97 male MMPI profiles and 5 of the 44 female MMPI profiles had  $T$  scores greater than 90 on the F scale, indicating exaggeration of difficulties, severe distress, or an invalid profile. Researchers have consistently demonstrated that adolescent profiles with very high  $F$  values are common and often prove to be clinically useful and interpretable (Archer, 1987; Dahlstrom et al., 1972). When participants with high  $F$  values were excluded from the sex-segregated cluster analyses, the MMPI cluster types were similar to those obtained when these participants were included. We therefore retained these participants in sub-

**TABLE 1**  
Comparison of Normative and Disorganized Male Cluster  
Groups on MMPI Validity and Clinical Scales

Scale	Normative ( <i>n</i> = 54)		Disorganized ( <i>n</i> = 43)		Cluster <i>F</i> <sup>a</sup>
	Mean	SD	Mean	SD	
L	54.37	8.92	55.02	10.87	0.11
F	67.44	18.64	104.37	29.42	56.62*
K	48.00	8.91	49.12	11.17	0.30
1 (H)	49.19	7.58	66.30	8.69	107.24*
2 (D)	51.85	7.79	62.00	6.36	47.69*
3 (Hy)	48.24	8.40	62.05	9.78	55.83*
4 (Pd)	64.76	6.26	70.21	7.26	15.78*
5 (Mf)	50.59	7.22	56.07	8.58	11.65*
6 (Pa)	62.31	8.13	74.02	11.05	36.12*
7 (Pt)	55.85	8.79	70.84	6.43	87.56*
8 (Sc)	61.15	9.04	78.63	7.07	107.95*
9 (Ma)	64.56	8.92	67.65	8.36	3.05
0 (Si)	54.98	4.50	56.98	3.99	5.35*

Note: MMPI = Minnesota Multiphasic Personality Inventory.

<sup>a</sup> *df* = 1,95.

\* *p* < .001.

sequent analyses. All analyses were also conducted excluding participants between the ages of 20 and 22 years, and because similar results emerged, we report analyses with the entire sample (*N* = 144).

To identify MMPI profile clusters for males and females we first calculated a proximity matrix in which the MMPI *T* scores were subjected to a measure of similarity using the squared Euclidean distance (Aldenderfer and Blashfield, 1984; Hair and Black, 2000). Next, we identified MMPI profile clusters within the male and female subsamples using Ward's clustering method (Ward, 1963). Using the previously calculated proximity matrix, we identified multiple cluster solutions that minimized the within-groups sum of squares. Finally, individuals were assigned to one of the previously identified clusters. Assignment was based on a nonhierarchical k-means iterative partitioning cluster analysis. For males and females separately, the cluster groups obtained in this manner were then compared on individual characteristics. Finally, MAYSI-2 scores were compared among the identified cluster groups for both males and females.

## RESULTS

### Male Cluster Membership and Cluster Profiles

For male participants, Ward's method indicated that a two-cluster solution provided the most clinically meaningful description of the data. Means and standard deviations of the validity and clinical scales are presented in Table 1. After identifying the two clusters, we obtained information from the MMPI literature that describes characteristics of adolescents and adults with similar profile configurations (Archer, 1987; Friedman et al., 1989; Graham, 1987; Williams, 1986).

*Cluster 1—Normative.* There were no clinical elevations on this profile (Table 1). This profile is not repre-

sentative of any specific psychological disturbance, and the validity scale configurations suggest that these individuals are being honest about their lack of psychological distress. Although this profile was not clinically elevated, it did resemble the 4-9 profile.

*Cluster 2—Disorganized.* The highest elevations on this profile were on scale 8 (Schizophrenia), followed by scales 6 (Paranoia), 7 (Psychasthenia), and 4 (Psychopathic Deviate) (Table 1). The profile combined with the elevated *F* scale suggests serious psychopathology with a large number of unusual experiences (Friedman et al., 1989; Graham, 1987). According to MMPI actuarial data, individuals with similar profiles are often described as moody, hostile, unpredictable, and prone to violent tempers. They lack basic social skills, tend to be socially withdrawn, and may report unusual thoughts, attitudes, or hallucinations. Individuals with similar profiles have a tendency to withdraw and rely on fantasy in times of stress. Psychotic symptoms, including bizarre thought content and delusions of persecution, are often present. Psychiatric diagnoses of schizophrenia or antisocial, schizoid, or paranoid personality disorders commonly accompany these profiles. Furthermore, this clinical profile coupled with the low *K* scale is often found among adolescents with poor peer relations, poor academics, and a possible family history of physical violence and rejecting caregivers.

### Female Cluster Membership and Cluster Profiles

For female participants, Ward's method yielded two possible cluster groupings, including either a two- or three-cluster solution. The three-cluster solution yielded two remarkably similar clusters, with both exhibiting a 4-8-6 clinical profile. Therefore, we describe the two-cluster solution because it appeared to yield the most distinct, parsimonious, and clinically meaningful groupings. Means and standard deviations of the validity and clinical scales for the two-cluster solution are presented in Table 2.

*Cluster 1—Impulsive-Antisocial.* Cluster 1 was characterized by a clinical elevation on scale 4 (Psychopathic Deviate) which is commonly found among individuals with antisocial tendencies. In general, this profile is representative of individuals whose past experiences include legal, family, and work-related difficulties. MMPI actuarial data indicate that individuals with this profile typically have a marked disregard for social standards, have poor judgment, do not accept responsibility for their behavior, and often demonstrate a low frustration tolerance (Archer, 1987; Friedman et al., 1989; Graham, 1987).



**TABLE 2**

Comparison of Impulsive-Antisocial and Irritable-Isolated Female Cluster Groups on MMPI Validity and Clinical Scales

Scale	Impulsive-Antisocial ( <i>n</i> = 25)		Irritable-Isolated ( <i>n</i> = 19)		Cluster <i>F</i> <sup>a</sup>
	Mean	SD	Mean	SD	
L	53.48	7.56	48.26	9.83	3.97*
F	57.76	9.01	80.63	18.47	29.33***
K	56.72	6.80	49.53	8.72	9.47**
1 (H)	56.60	8.83	67.37	8.50	16.57***
2 (D)	48.28	9.01	65.37	7.23	45.85***
3 (Hy)	52.72	5.57	61.47	8.52	16.93***
4 (Pd)	75.92	10.34	86.74	8.80	13.40***
5 (Mf)	59.04	9.88	56.15	14.66	0.61
6 (Pa)	58.16	7.18	77.26	11.97	43.37***
7 (Pt)	57.68	8.78	76.37	6.87	58.65***
8 (Sc)	64.16	7.43	84.68	11.51	51.52***
9 (Ma)	68.20	12.11	74.31	12.16	2.75
0 (Si)	45.60	7.12	57.00	9.79	20.02***

Note: MMPI = Minnesota Multiphasic Personality Inventory.

<sup>a</sup> *df* = 1,42.\* *p* < .05; \*\* *p* < .01; \*\*\* *p* < .001.

The corresponding low score on scale 0 (Social Introversion) indicates that these individuals have highly developed social techniques that are used to manipulate others. If they do report depression or anxiety, these symptoms tend to be short-term and do not affect their behavior. Intense feelings of anger and hostility are expressed in occasional emotional outbursts, making psychotherapy with these individuals difficult. Clearly, this female delinquent cluster has a profile that is distinct from that of either male cluster. Notably, this female delinquent cluster is marked by a statistically discernible clinical elevation not evidenced among the male Normative cluster. But as with the male Normative cluster, the profile characterizing the female Impulsive-Antisocial cluster is still distinct from the more dramatic profile exhibited by their Irritable-Isolated counterparts, as described below.

**Cluster 2—Irritable-Isolated.** The highest elevations on this profile were on scales 4 (Psychopathic Deviate) and 8 (Schizophrenia), followed in turn by scales 6 (Paranoia), 7 (Psychasthenia), and 9 (Hypomania). As with the Disorganized male cluster, the corresponding elevated *F* scale indicates significant levels of pathology. Individuals with similar profiles are often described as impulsive, angry, distrustful, and socially isolated. Similar to the 4-9 MMPI code type, persons with the 4-8-6 profile often have extensive criminal histories. However, compared with offenders with a 4-9 code type, these individuals

tend to commit crimes that are poorly planned and brutal. Adolescents with similar profiles often experience either a severe transient adjustment disorder or a prepsychotic episode, including delusions and hallucinations. Psychiatric diagnoses of schizophrenia or antisocial, schizoid, or paranoid personality disorders commonly accompany these profiles.

Both male and female samples, then, exhibit two distinct clusters, each with distinct psychiatric profiles. However, while 56% of males fall into a cluster with no clinically elevated scales, both female clusters exhibit psychiatric symptoms. The distinct profiles exhibited across these clusters for males and females clearly suggest that there are also important variations in psychiatric symptoms within sex.

#### Comparison of MMPI Cluster Profiles

**Individual Characteristics.** Group differences in offense type (violent, nonviolent) and ethnic distribution were evaluated separately for males and females with  $\chi^2$  analyses. Cluster groups were also compared using an independent *t* test on the length of their current incarceration (in months). For both males and females, no significant differences were found between the two clusters on offense type, ethnicity distribution, or length of incarceration (*p* values > .05). Differences between the two clusters on age, educational level (i.e., last grade completed in school), and parents' education were examined separately for males and females with independent *t* tests. Again, no significant differences were found for males or females (*p* values > .05) on these dimensions. Overall, it appears that these variables had no impact on cluster membership.

#### Differences in Mental Health Within Sex

Mental health symptoms of the MMPI cluster groups were evaluated with multivariate analysis of variance (MANOVA) for males and females separately. Comparisons of the two cluster groups for each sex on the MAYSI-2 scales indicate distinct mental health symptoms across cluster, thereby validating the clusters. These analyses included 43 females and 92 males because of missing MAYSI-2 data.

**Male MMPI Cluster Groups.** Because the MAYSI-2 scales were moderately correlated, a MANOVA was performed to assess cluster group differences across the seven MAYSI-2 scales. An overall significant cluster group effect emerged ( $\Lambda = .15$ ,  $F_{7,84} = 72.47$ , *p* < .001), which was followed by a series of univariate *F* tests to determine on

**TABLE 3**

Comparison of Male Normative and Disorganized Cluster Groups on MAYSI-2 Scales

Scale	Normative ( <i>n</i> = 51)		Disorganized ( <i>n</i> = 41)		Cluster <i>F</i> <sup>a</sup>
	Mean	SD	Mean	SD	
Alcohol/Drug Use	3.88	2.79	5.27	1.93	7.67*
Angry-Irritable	4.13	2.69	4.61	2.99	0.70
Depressed-Anxious	1.86	1.61	3.36	2.28	14.37**
Somatic Complaints	2.07	1.78	2.78	2.04	3.35
Suicide Ideation	0.31	0.85	0.80	1.33	4.94*
Thought Disturbance	0.64	0.87	1.23	1.17	7.97**
Traumatic Experiences	2.08	1.06	2.31	1.26	0.92

Note: MAYSI-2 = Massachusetts Youth Screening Instrument-Version 2.

<sup>a</sup> *df* = 1,90.

\* *p* < .01; \*\* *p* < .001.

what scales the groups differed. Given the number of tests conducted in this study, we set an experiment error-rate of *p* < .01 for the significance level. As a result, follow-up univariate *F* tests indicated significant cluster group differences for three of the seven MAYSI-2 scales (Table 3). Males in the Disorganized group reported significantly more symptoms related to depressed mood, alcohol and drug abuse, and thought disturbances (*F*<sub>1,90</sub> values = 7.67–14.37, *p* values < .01).

**Female MMPI Cluster Groups.** A MANOVA with cluster membership as the independent variable and six MAYSI-2 scales as the dependent variables revealed an overall significant cluster group effect ( $\Lambda = .50$ , *F*<sub>6,36</sub> = 6.08, *p* < .001). Using an experiment error-rate of *p* < .01 for the significance level, follow-up univariate *F* tests revealed that, relative to females in the Impulsive-Antisocial group, females in the Irritable-Isolated group reported significantly more symptoms related to depressed mood, angry-irritable mood, and suicidal ideation (*F*<sub>1,41</sub> values = 14.44–21.98, *p* values < .01) (Table 4).

## DISCUSSION

The rates of mental illness among incarcerated youths are substantially higher than the rates in the general adolescent population (Kazdin, 2000). As observed in the present study, there are indeed adolescents within the juvenile justice system who suffer from psychological disturbances. Results of MMPI cluster analysis revealed two distinct profiles for male offenders and two others for female juvenile offenders. Our findings indicate that not only do males and females exhibit distinct MMPI profiles, but female

**TABLE 4**

Comparison of Female Impulsive-Antisocial and Irritable-Isolated Cluster Groups on MAYSI-2 Scales

Scale	Impulsive-Antisocial ( <i>n</i> = 24)		Irritable-Isolated ( <i>n</i> = 19)		Cluster <i>F</i> <sup>a</sup>
	Mean	SD	Mean	SD	
Alcohol/Drug Use	1.84	2.61	3.13	3.17	2.18
Angry-Irritable	2.92	2.47	6.39	2.79	19.06*
Depressed-Anxious	1.76	1.51	4.47	2.32	21.98*
Somatic Complaints	1.94	2.12	3.08	1.92	3.37
Suicide Ideation	0.48	1.16	2.28	1.96	14.44*
Traumatic Experiences	3.40	1.71	3.44	1.64	0.01

Note: MAYSI-2 = Massachusetts Youth Screening Instrument-Version 2.

<sup>a</sup> *df* = 1,42.

\* *p* < .001.

offenders have more psychological symptoms than male offenders. Both of the female MMPI clusters produced clinically elevated psychological profiles, suggesting that all of the female offenders in the sample exhibit some type of mental health symptoms. On the other hand, only one of the two male clusters was in the clinical range, with 56% of male juvenile offenders in the sample falling into the cluster with no clinically elevated MMPI scales.

Despite these differences in cluster profiles across sex, within each sex there is one cluster with notably more severe symptoms than the other. Among males, MAYSI-2 scores indicate that the Disorganized cluster reported significantly more substance use, depression, suicidal ideation, and thought disturbance than the Normative cluster. Similarly, among females, MAYSI-2 scores indicate significantly more anger, depression, and suicidal ideation among the Irritable-Isolated cluster than the Impulsive-Antisocial cluster.

These results, in conjunction with the MMPI profiles, suggest a high degree of internalizing symptoms among the males and females in our sample. This is consistent with recent research documenting notable rates of internalizing disorders among juvenile offending populations (Teplin et al., 2002), but at odds with standard institutional practice, which tends to focus exclusively on externalizing symptoms because they are often easier to identify and target through services (Barnum and Keilitz, 1992; Grisso, 1988). Unfortunately, focusing exclusively on these symptoms and ignoring the high prevalence of less obvious symptoms (e.g., depression, anxiety) is likely to inadvertently leave the mental health symptoms of many youths undetected and untreated.

In this vein, it is notable that in the current study, among both males and females, the clusters with the most severe symptoms have higher means on both depression and suicidal ideation than their less distressed counterparts. Moreover, the MMPI profile of males in the Disorganized cluster suggests that, aside from being moody, hostile, unpredictable and prone to violent tempers, these individuals are typically socially withdrawn and paranoid. Without an assessment of the internalizing symptoms experienced by this group, it is no wonder that their externalizing behavior appears unpredictable. Their externalizing behavior may be a response to feelings of isolation and delusions of persecution that standard assessments focused on externalizing symptoms would likely overlook. For this group, better assessment and treatment of internalizing symptoms might also help calm externalizing symptoms. Similarly, the female Irritable-Isolated cluster is socially isolated and prone to impulsive behavior. Again, their impulsive behavior may be difficult to assess and treat without a clear understanding of their comorbid internalizing symptoms.

#### Limitations

Although our study improved upon previous research by including a violent and nonviolent offending population, including male and female offenders, and using multiple measures to assess mental health problems, we need to acknowledge several limitations of the study. First, the sample size for the present investigation was small. With a larger sample size, we may have uncovered more distinct clusters or more detailed psychological profiles. Despite the small sample size, we were still able to identify two unique clusters of psychological characteristics. This identification suggests that there is considerable heterogeneity within adolescent offending populations and that numerous youths within the juvenile justice system are presenting with mental health symptoms. Second, we did not use the MMPI-Adolescent (Butcher et al., 1992), which was specifically designed for use with adolescents. However, the MMPI-Adolescent may not be sensitive enough to detect problems among youths and, in particular, is not sufficient for use with incarcerated youths (Hume et al., 1996).

#### Clinical Implications

Despite these limitations, our results are consistent with other recent work that calls attention to the need for detailed assessments of mental health symptoms of male and female

juvenile offenders (Cauffman, 2000; Kazdin, 2000; Teplin et al., 2002; Wasserman et al., 2002). For reasons that may have to do with poor health care utilization prior to incarceration (Atkins et al., 1999) and poor detection during incarceration, a substantial portion of incarcerated youths show a wide range of significant comorbid psychological conditions. If we are to improve the effectiveness of the juvenile justice system's rehabilitation programs, then we need both accurate assessments of these youths' mental health problems as well as an understanding of the services these youths encounter before, during, and after their initial contact with the system. This type of information will not only allow for an evaluation of how well services are matched with the needs of juvenile offenders, but will also serve as a starting point for more detailed analyses of the effectiveness of different services among delinquent populations with diverse mental health conditions. In addition, our study identifies heterogeneity in the mental health symptoms of incarcerated youths both within and across sex. It is important to note that these variations are independent of ethnicity, social class, or committing offense. Focused assessments are imperative as is the need for more diverse treatment portfolios and directed treatment strategies. The one size fits all, group treatment model seems doomed to fail, especially for those with the most severe problems, who are notably those with the most pronounced social phobias and withdrawn personalities and, therefore, those most in need of individualized treatment. This study supports the notion that with better information, agencies can begin to identify, implement, and evaluate programs and services intended to reduce mental health-related behavior problems and to improve rehabilitative efforts and criminological outcomes.

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